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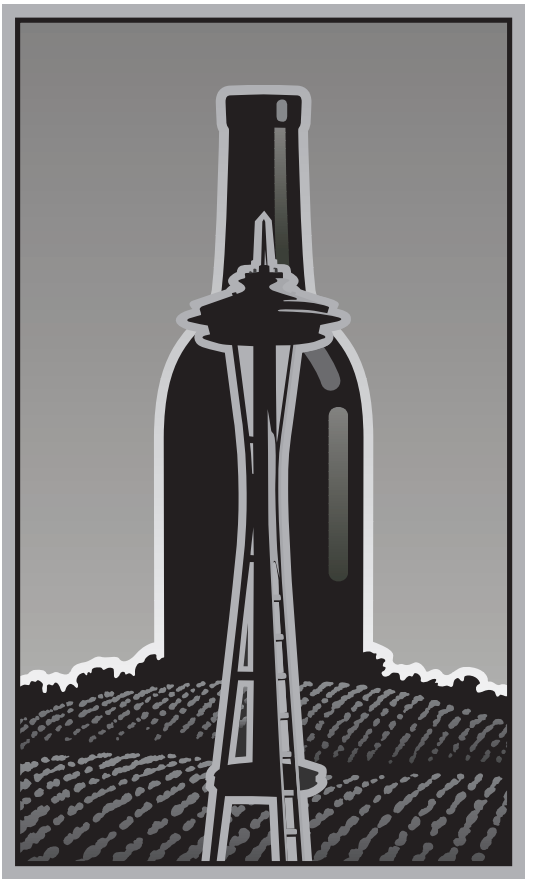

# Technical Abstracts

**Production of Volatile Phenols by Lactic Acid Bacteria**

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Some wine microorganisms can produce volatile phenols (4-vinylphenol and 4-ethylphenol) from wine phenolic (*p*-coumaric and ferulic) acids. Volatile phenols have characteristic aromas that, above a certain concentration threshold, have a negative effect on the overall aroma of a wine but at low concentrations have been cited as contributing positively to aroma complexity. Previous works showed that some strains of lactic acid bacteria (LAB) can produce low concentrations of volatile phenols in near-wine conditions. In this work, 35 strains of LAB (19 species) were screened for their ability to produce volatile phenols from the corresponding phenolic acids. Cells were cultivated in liquid media supplemented with *p*-coumaric or ferulic acid at 500 mg $L^{-1}$. The concentration of volatile phenols in the growth media was analyzed by GC-FID. Results indicated that 13 strains (37%) were able to produce volatile phenols from *p*-coumaric acid, although only three

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(9%) produced 4-ethylphenol as the final product. Seven strains (20%) were able to convert ferulic acid to 4-vinylguaicol but none produced 4-ethylguaiacol. Seven (of eight) strains of *Pediococcus* and six (of 25) strains of *Lactobacillus* produced volatile phenols from phenolic acids in sensorially significant amounts. The two *Oenococcus oeni* strains studied did not produce volatile phenols. Strains which were found to produce volatile phenols were used in subsequent studies at lower phenolic acid concentrations. Experiments with added 5.0 mg $L^{-1}$ of *p*-coumaric acid showed that some strains can still produce relatively high (up to 800 µg $L^{-1}$) concentrations of 4-ethylphenol.